

A NEW SPECIES OF *BRACON* (HYMENOPTERA: BRACONIDAE)  
PARASITIC ON *EOREUMA LOFTINI* (DYAR)  
(LEPIDOPTERA: PYRALIDAE)

R. A. WHARTON AND D. L. J. QUICKE

(RAW) Department of Entomology, Texas A&M University, College Station, Texas 77843; (DLJQ) Department of Zoology, University of Sheffield, Western Bank, Sheffield S10 2TN, United Kingdom.

---

*Abstract.*—A new species of *Bracon* (Hymenoptera, Braconidae) is described. This species is parasitic on stem-boring Pyralidae (Lepidoptera) in grasses, and has been reared during biological control programs directed against *Eoreuma loftini* (Dyar). Unusual features, not previously associated with the genus *Bracon*, are described.

*Key Words:* *Bracon*, Braconidae, Biocontrol, stem borer, Pyralidae

---

An undescribed species of *Bracon* was reared during the course of a biological control program directed against the Mexican rice borer, *Eoreuma loftini* (Dyar). It is described here to provide a name for researchers working on stem borers, and to identify several unusual features not previously reported for Nearctic *Bracon* species. This species has been reared only from *E. loftini* in grasses of the genera *Setaria*, *Cynodon*, and *Sorghum*.

Terminology for the description follows van Achterberg (1979) and Quicke (1987), except that the total length of the ovipositor has been measured rather than just the portion extending beyond the metasoma. Measurements presented only as ratios or ranges are based on five individuals, with ratios representing median values. Ranges followed by a mean and standard deviation in parentheses are based on 10 individuals.

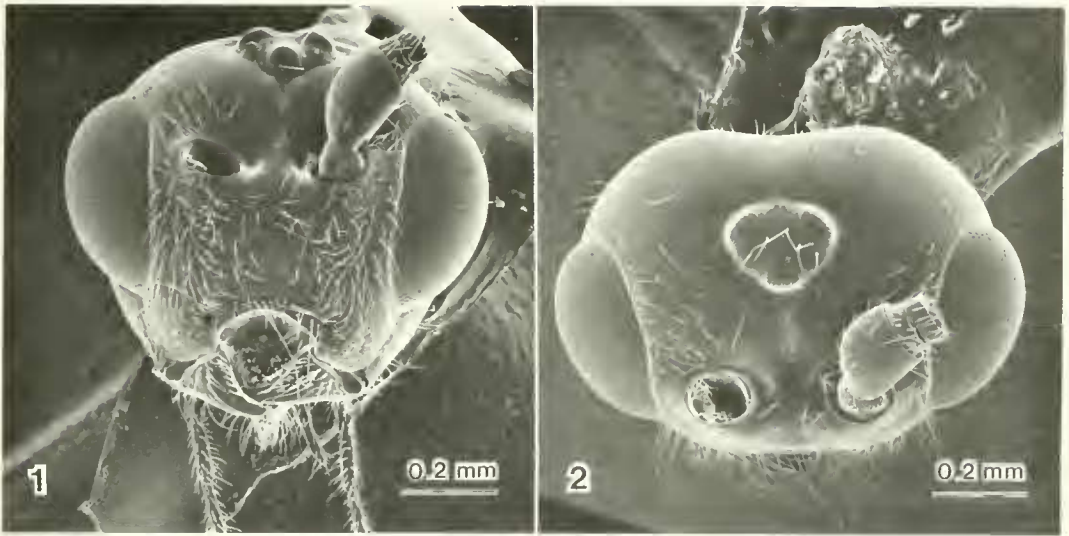
*Bracon rhyssaliformis*

Quicke & Wharton, NEW SPECIES

Figs. 1–11

Males.—Length of body 2.5–5.0 mm and of fore wing 2.1–4.0 mm.

Antennae with 38–45 flagellomeres. Terminal flagellomere strongly acuminate (Fig. 3), 3.0 times longer than maximally wide. Penultimate flagellomere 1.8–2.4 times longer than wide. Median flagellomeres 1.7–2.0 times longer than wide. First flagellomere 1.05–1.20 times and 1.10–1.25 times longer than the 2nd and 3rd respectively, the latter being 2.0–2.3 times longer than wide. Hypoclypeal depression dorsally strongly rounded, bordered dorsally by a distinct lamelliform carina. Clypeus separated from face dorsally by a narrow shallow sulcus. Height of clypeus: inter-tentorial distance: tentorio-ocular distance = 1:2.6:1.7. Face moderately densely short setose laterally, more or less glabrous medially; smooth and shiny between the punctures at the bases of the setae except for the malar space which is broadly imbricate. Width of head: shortest distance between eyes: height of eye = 1:0.55:0.46. Eyes moderately densely short-setose medially, glabrous laterally (Fig. 1). Frons hardly impressed behind the antennal sockets, with a well-developed mid-longitudinal sulcus. Vertex, temples and occiput sparsely setose. Ocelli



Figs. 1–2. Scanning electron micrographs of head, *Bracon rhyssaliformis*. 1, facial view. 2, dorsal view.

small, shortest distance between posterior ocelli : narrower diameter of elliptical posterior ocellus : shortest distance between posterior ocellus and eye = 1:0.7:2.1. Head subparallel immediately behind eyes (Fig. 2).

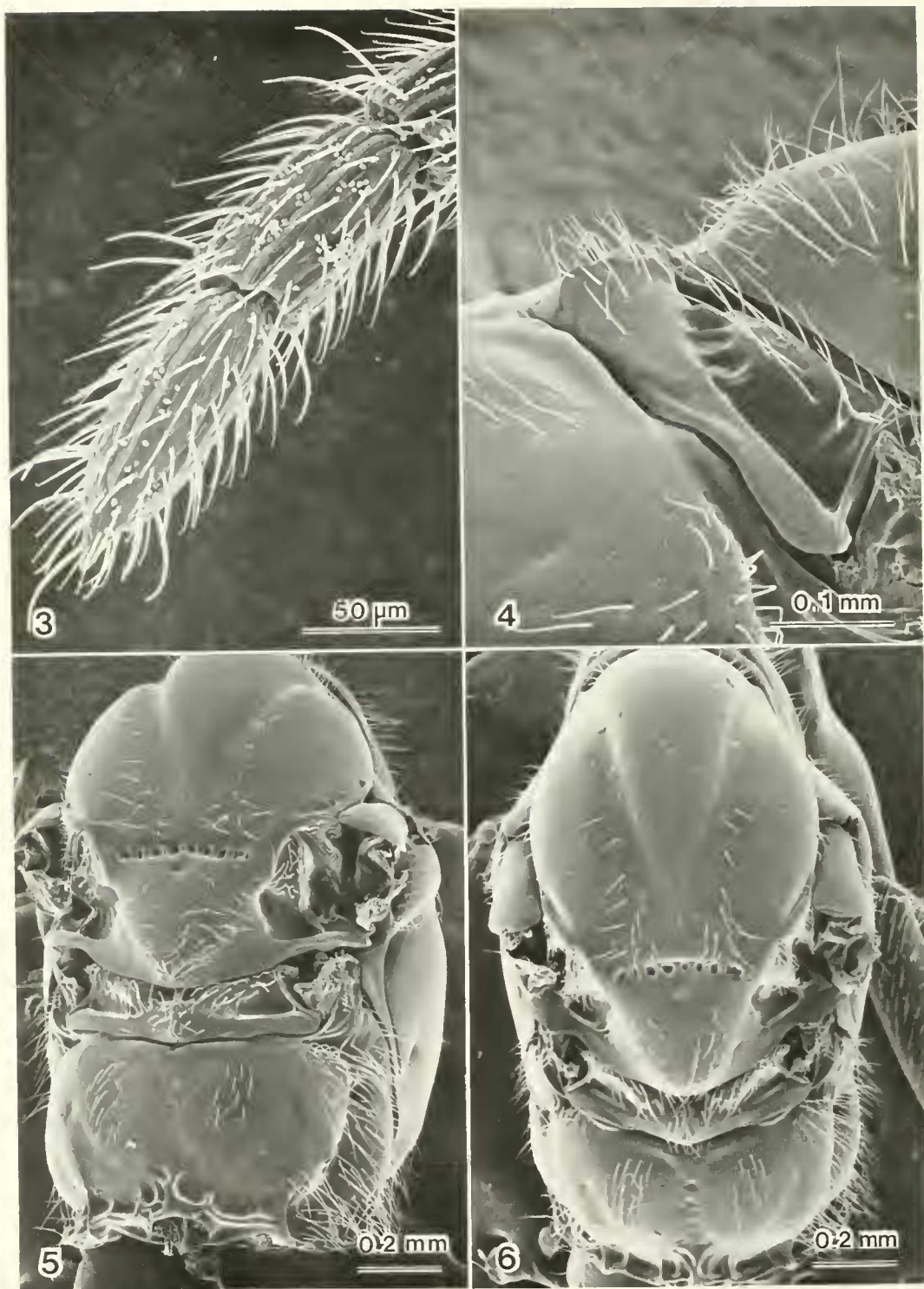
Fore wing (Fig. 11). Veins C + SC + R and 1-SR forming an angle of approximately 65°. Vein 1-SR + M straight. Length of veins r:3-SR:SR1 = 1:2.4:6.2; SR1 2.13–3.08 ( $2.54 \pm 0.32$ ) times longer than 3-SR; 3-SR 1.13–1.43 ( $1.27 \pm 0.10$ ) times longer than 2-SR. Vein r-m straight; vein 2-M distinctly curved. Vein 2-SR + M usually rather long, 0.60–1.04 ( $0.82 \pm 0.12$ ) times length of m-cu. Veins 2-CU and 3-CU forming an angle of approximately 75°. Vein cu-a often (50% of specimens) interstitial, otherwise antefurcal.

Hind wing (Fig. 11). Apex of vein C + SC + R with 1 thickened bristle (hamule). Vein 1r-m short, SC + R1 1.76–3.14 ( $2.29 \pm 0.43$ ) times longer than 1r-m. Vein 2-SC + R distinctly longitudinal. Base of wing evenly densely setose.

Claws with acutely pointed basal lobes. Length of fore femur : tibia : tarsus = 1:1.2:1.5. Length of hind femur : tibia : basitarsus

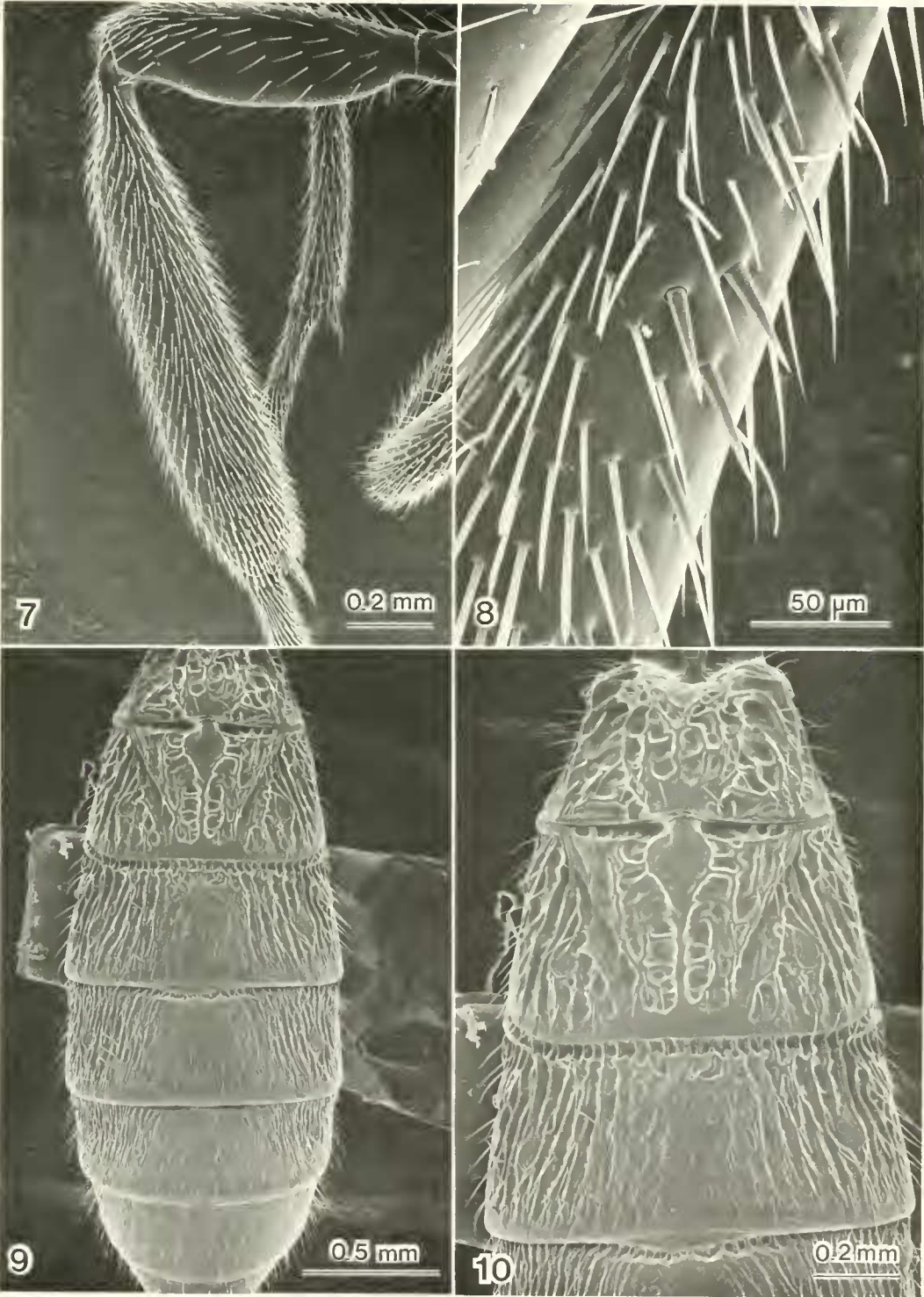
= 1:1.9:0.6. Hind tibia (Fig. 7) extraordinarily swollen for its whole length, 5.3–6.5 times longer than maximally deep, without a distinct longitudinal, lateral furrow. Hind basitarsus 5.1–6.6 times longer than deep. Fore tibia with a longitudinal row of stout setae interspersed with finer ones (Fig. 8).

Mesosoma (Figs. 4–6) smooth and polished. Pronotum in dorsal view long, bisected by a deep, usually smooth, transverse sulcus; this sulcus usually connected to anterior margin by a short, median longitudinal groove. Mesonotum weakly declivous, nearly bare, with patch of 5–10 setae near base of notaulus and less than 15 setae extending along each notaulus to the posterior margin. Notauli unsculptured, deep anteriorly, evanescent posteriorly. Prescutellar pit narrow, containing 3–9 short, longitudinal ridges. Scutellum usually (70% of specimens) with small median pit anteriorly. Metanotum (Fig. 4) often (40% of specimens) with complete median longitudinal carina. Propodeum usually (60% of specimens) with rugae or carinae along midline, forming an irregular longitudinal ridge, but propodeum completely smooth in 30% of specimens.

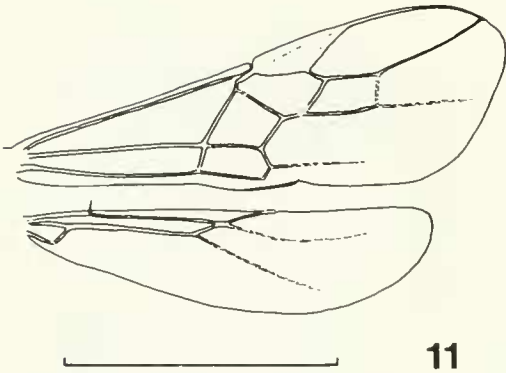


Figs. 3-6. Scanning electron micrographs, *Bracon rhyssalisformis*. 3, terminal flagellomere with acuminate tip. 4, dorso-lateral, oblique view of metanotum showing median carina. 5 & 6, dorsal view of mesosoma showing effect of angle of view on appearance of certain sculptural features.





Figs. 7–10. Scanning electron micrographs, *Bracon rhyssaliformis*. 7, hind femur and swollen hind tibia of male. 8, spinose setae of fore tibia. 9 & 10, metasoma of male.



11

Fig. 11. Fore and hind wing; scale = 2.0 mm.

First metasomal tergum approximately as long as posteriorly wide, with distinct though sub-lamelliiform dorso-lateral carinae; posterior 0.6–0.7 of 1st tergum rugose and distinctly elevated medially. Second and 3rd metasomal terga (Fig. 10) separated by a broad, carinate suture. Second tergum with narrow, relatively smooth, triangular plate baso-medially, apex of triangle extending as a carina to or nearly to the posterior margin; median triangle centered within a larger, raised, triangular area usually delimited laterally by distinct, weakly converging, lateral grooves; entire tergum rugoso-striate. Terga 3–5 (Fig. 9) completely rugose to rugoso-striate, with metasomal sculpture weaker posteriorly. Remaining terga often finely or only incompletely sculptured.

*Color*: orange; gena, palps and fore wing stigma often yellow; pedicel, flagellum, hind tibia, and 5th tarsus of mid, hind, and sometimes fore leg dark brown to black; wings usually uniformly infumate; 60% of specimens with small dark spot on temple adjacent eye, and varying amount of dark markings around ocellar field.

*Females*.—Similar to males except as follows:

Length of fore wing 2.5–4.3 mm. Antennae with 36–48 flagellomeres. Median flagellomeres 1.4–1.6 times longer than wide. Clypeus short, inter-tentorial distance approximately 3.4–4.0 times height of clypeus.

Ocellar triangle even smaller than in male, with shortest distance between posterior ocellus and eye approximately 2.5 times shortest distance between posterior ocelli (ocellar measurements highly variable). Length of fore wing veins  $r:3\text{-SR}:SR1 = 1:2.2:5.6$ ;  $SR1$  2.30–2.88 ( $2.53 \pm 0.17$ ) times longer than  $3\text{-SR}$ ;  $3\text{-SR}$  1.20–1.29 ( $1.23 \pm 0.03$ ) times longer than  $2\text{-SR}$ , these ratios thus less variable than in males. Length of hind femur : tibia : basitarsus = 1:1.7:0.5. Hind tibia not swollen, 10.5–12.1 times longer than deep. Hind basitarsus 4.2–5.3 times longer than deep. Scutellum usually (70%) without small median pit. Metanotum with median carina nearly always well developed. Propodeum with at least some sculpture along midline in 90% of specimens. Metasomal sculpture variable, often (40% of specimens) considerably reduced posteriorad 3rd segment. Second metasomal segment with median triangle often weakly defined due to absence of distinct longitudinal depression on either side of median triangle; larger median triangular area usually set off laterally by a pair of strongly converging grooves. Ovipositor (total length) 1.7–1.9 times longer than mesosoma, with small, sharp subapical node dorsally and well-defined serrations ventrally at tip; ovipositor sheath 1.1–1.2 times longer than mesosoma. Color as in male, but only 2 of the specimens examined with a black spot on the temple; ovipositor sheath black, ovipositor red.

*Holotype* ♂.—U.S.A.: Texas, Hidalgo County, TAES Annex, 2 miles north of Mercedes, ex. *Setaria* (Poaceae), 19.ix.1984, H. W. Browning, in U.S. National Museum of Natural History (= USNM).

*Paratypes*.—MEXICO: Nuevo Leon, Monterrey (Marin), 2–3.vii.1982, J. W. Smith, Jr. & F. Bennett, Texas A&M University (= TAMU) Quarantine Number 82015, TAMU Voucher Number 208 (6 ♂, 4 ♀) reared from *E. loftini* ex. *Sorghum halapense*. U.S.A.: Texas, same data as holotype (6 ♂, 8 ♀); Hoblitzelle Farm, 5 miles

north of Mercedes, reared from *Eoreuma loftini* (Dyar) on Bermuda grass (*Cynodon*), 15.viii.1984, H. W. Browning (2 ♂, 4 ♀); 4 miles north of Mercedes, ex. *Eoreuma loftini* in Bermuda grass, 29.v.1985, R. Pfannenstiel (2 ♀); 5 miles northwest of Weslaco, 1.vi.1983, C. W. Melton (1 ♀). Paratypes deposited in TAMU Collection, USNM, Canadian National Collection, and British Museum (Natural History).

Diagnosis.—The enlarged hind tibia of the male readily separates *rhyssaliformis* from all previously described species of *Bracon*. This species runs to *oenotherae* Muesebeck in the latest revision of the Nearctic species of *Bracon* (Muesebeck 1925). It is also somewhat similar to *mellitor* (Say). As in *oenotherae* and *mellitor*, the metasoma is extensively sculptured, the propodeum is unsculptured except along the midline, and the fore wing stigma tends to be yellow. However, females of both *oenotherae* and *mellitor* have more extensive dark markings on the hind legs and the petiolar sculpture in both sexes is less rugose than in *rhyssaliformis*. *Bracon mellitor* also has a longer ovipositor and *oenotherae* a relatively shorter second tergum.

Discussion.—The enlarged hind tibia of the male, fore tibial spines, and petiolar morphology place *rhyssaliformis* in a somewhat isolated position amongst the species of *Bracon* known from the Nearctic Region. Since this region has not been well-studied, and several species are as yet undescribed, further discussion regarding the relation-

ships of *rhyssaliformis* would be premature.

Despite the presence of some doryctine characteristics (notably the fore tibial spines), *rhyssaliformis* is clearly a braconine, and readily fits the characterization of *Bracon* given by Quicke (1987). Diagnostic features for the genus include the 5-segmented maxillary palps; upper margin of mandible abutting lower margin of face without formation of a groove; scape longer dorsally than ventrally; fore and hind wing as in Fig. 11; and absence of an occipital carina, a prepectal carina, and a sculptured sternaulus.

#### ACKNOWLEDGMENTS

We wish to thank F. Bennett, J. W. Smith, Jr., and H. W. Browning for making this material available for study, and for providing the rearing records. Approved as TA#23276 by the Texas Agricultural Experiment Station. This work was supported in part by the Rio Grande Valley Sugar Growers, Inc.

#### LITERATURE CITED

- Muesebeck, C. F. W. 1925. A revision of the parasitic wasps of the genus *Microbracon* occurring in America North of Mexico. Proc. U.S. Natl. Mus. 67: 1–85.
- Quicke, D. L. J. 1987. The Old World genera of braconine wasps (Hymenoptera: Braconidae). J. Nat. Hist. 21: 43–157.
- Van Achterberg, C. 1979. A revision of the subfamily Zelinae auct. (Hymenoptera, Braconidae). Tidschr. Ent. 122: 241–479.